

ABSTRACT

The present invention is directed to the use of microparticles to protect the pharmaceutical effectiveness of a pharmaceutically active agent. According to one embodiment, a pharmaceutically acceptable suspension is provided that comprises microparticles and a pharmaceutically active agent. This pharmaceutically acceptable suspension is then exposed to a component or condition that is incompatible with the pharmaceutically active agent, such that the microparticles provide a pharmaceutical effectiveness that is greater than it would have been in the absence of the microparticles. Preferably, the microparticles result in a pharmaceutical effectiveness of the pharmaceutically active agent that is at least 10% greater than the pharmaceutical effectiveness of the pharmaceutically active agent would have been in the absence of the microparticles. Polymer microparticles, such as polystyrene microparticles, are one preferred class of microparticles. The microparticles preferably range from 0.01 to 100 microns in largest dimension, more preferably 0.1 to 10 microns in largest dimension. The microparticles are preferably provided in an amount of 0.1 to 1 wt% within the suspension. Agents comprising polynucleotides, including cells, plasmids and viral vectors, are a preferred class of pharmaceutically active agent. Other embodiments on the invention are directed to pharmaceutically acceptable suspensions, medical devices for parenteral injection, and methods of treatment.

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